

***Heleanna melanomochla* (Meyrick) (Lepidoptera, Tortricidae), feeding on mango in Taiwan**

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Abstract *Heleanna melanomochla* (Meyrick), of which larva feeds on mango in Taiwan, is redescribed. The genitalia and immature stages are illustrated for the first time.

Key words Tortricidae, *Heleanna melanomochla* (Meyrick), immature stages, insect pest of mango, Taiwan.

Heleanna melanomochla (Meyrick) was described by E. Meyrick in 1936, based on some specimens bred from larvae feeding on mango in Taiwan. Until now, this species has been little studied, and the genitalia and immature stages have not been figured. Recently, I collected the larvae** in Taiwan and got some emerged moths. In the following lines the redescription of the moth is given, with the illustrations of adult, genitalia, larva and pupa.

***Heleanna melanomochla* (Meyrick) (Figs 1-17)**

Acroclita melanomochla Meyrick, 1936: 24; Diakonoff, 1950: 279; Clarke, 1958: 276, fig. 2 (left wings); Kawabe & Komai, with Razowski, 1992: 108.

Heleanna melanomochla: Clarke, 1976: 12.

♂. Wing expanse 10-11 mm. Head brownish gray, tips of scales whitish; face flattened, scales extending over, reaching second segment of labial palpus (Fig. 2: arrow). Antenna thick, brownish gray. Labial palpus brownish gray, tips of scales whitish; second segment triangular (Fig. 2), brownish dorsally; third segment dark gray. Thorax grayish olive, whitish posteriorly; tegula brownish. Forewing elongate oblong, apex and tornus rounded, costa concave at the base, with some small rounded scale-tufts on the basal half. Ground color grayish brown, beyond middle suffused with cream-white and gray. Costa with four pairs of cream-white strigulae from apex to middle. Median fascia indicated by gray wide band dusted with grayish olive, running from basal 1/3 of costa to middle of dorsum. Two conspicuous black dashes on apical half, and a black spot on apex. Cilia brownish gray, whitish on tornus. Hindwing semitriangular, dorsum extended. Color light grayish brown, semitransparent; veins blackish, conspicuous. Cubital pecten long. Cilia light grayish brown, blackish on dorsum.

Male scent organs. Costal fold absent. Forewing with a large tuft of slender cream-white scales on the basal 1/4 of costa (Fig. 3: large arrow), and with an oval patch covered with long brown scales, concealing numerous filiform cream-white scales, on the base of cell (Fig. 3: small arrow). Hindwing with slender cream-white scales on the extended dorsum (Fig. 4: large arrow), and with a tuft of filiform cream-white scales on the base of dorsum (Fig. 4: small arrow).

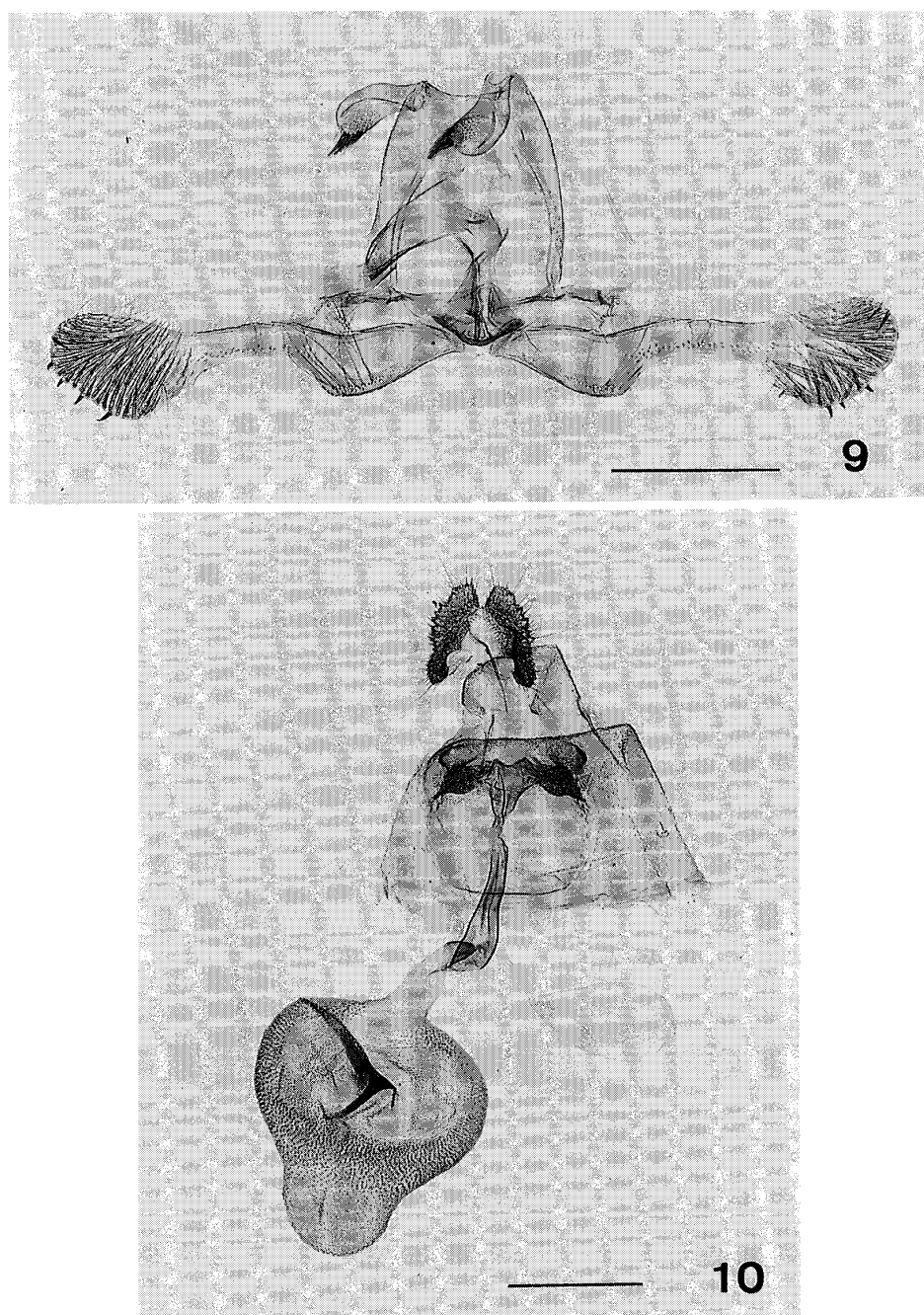
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** The larvae were imported from Taiwan under permission of the Japan Ministry of Agriculture, Forestry and Fisheries (Kobe Plant Quarantine Station, No. 128 in 1994).



Figs 1-8. *Heleanna melanomochla* (Meyrick). 1. Adult, ♂. 2. Head, ♂, lateral view. Arrow: extending scales on face. 3. Scent organs of male forewing. Large arrow: tuft on costa; small arrow: oval patch covered with long scales on the base. 4. Scent organs of male hindwing. Large arrow: cream-white scales on dorsum; small arrow: tuft on the base of dorsum. 5. Folded leaf of mango by larva. 6. Mature larva. 7. Larva before pupating. 8. Pupa.

Male genitalia (Fig. 9). Tegumen with a wide dorsal concavity. Uncus absent. Socius long, setose on inner side, with five or six stout setae in the apex. Gnathos weakly sclerotized. Aedeagus cone-shaped, armed with 11-12 fusiform cornuti. Valva constricted deeply (neck distinct, long); basal opening with a setose lobe on the posterior edge. Cucullus oval, with many stout setae on the inner side, the posterior edge with

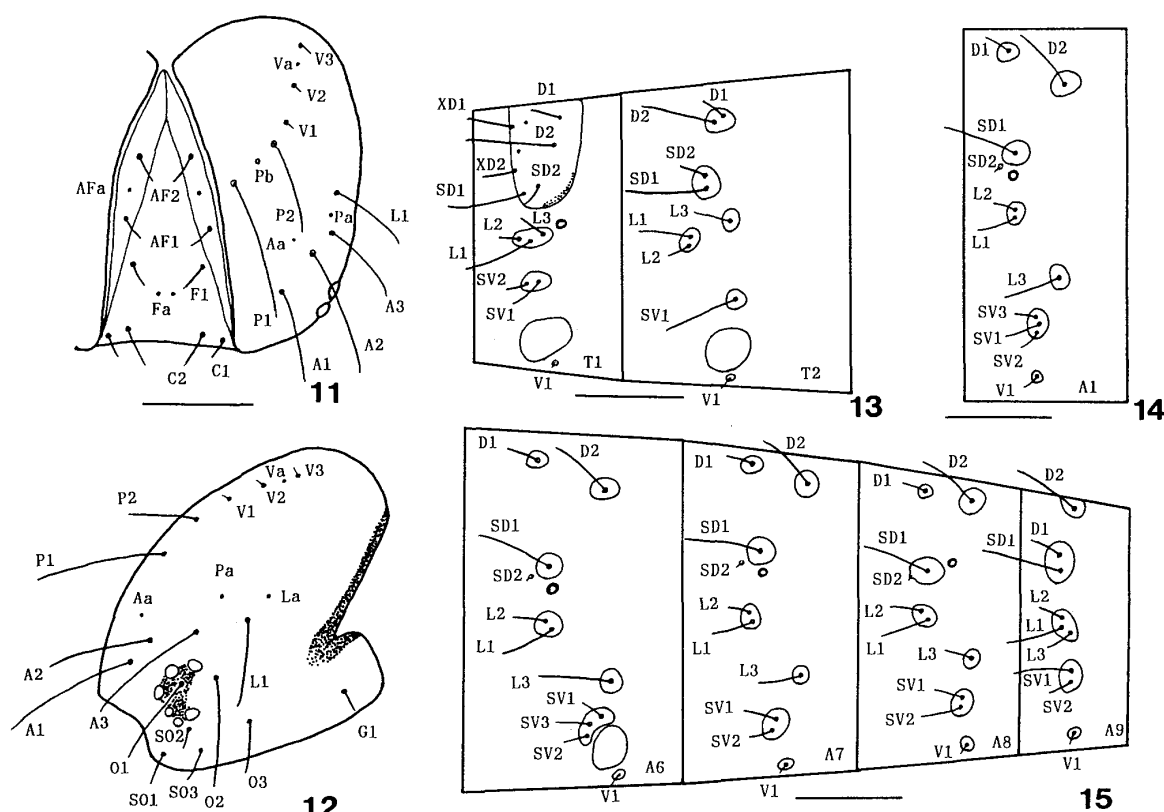


Figs 9, 10. *Heleanna melanomochla* (Meyrick). 9. Male genitalia. 10. Female genitalia (Scales: 0.5 mm).

some short stout setae.

♀. Wing expanse 10.5-12 mm. Head and thorax similar to those of male, but antenna slender. Forewing coloration and markings as in male, but costa moderately curved, with six pairs of costal strigulae from apex to basal 1/4; median fascia inconspicuous, indicated by whitish sinuous streaks, originating from the fifth and sixth costal strigulae. Hindwing semioval, with cubital pecten shorter than that of male, cilia light grayish brown.

Female genitalia (Fig. 10). Papillae anales flat. Apophysis posterioris as long as apophysis anterioris. Intersegmental membrane between sternites 7 and 8 weakly sclerot-



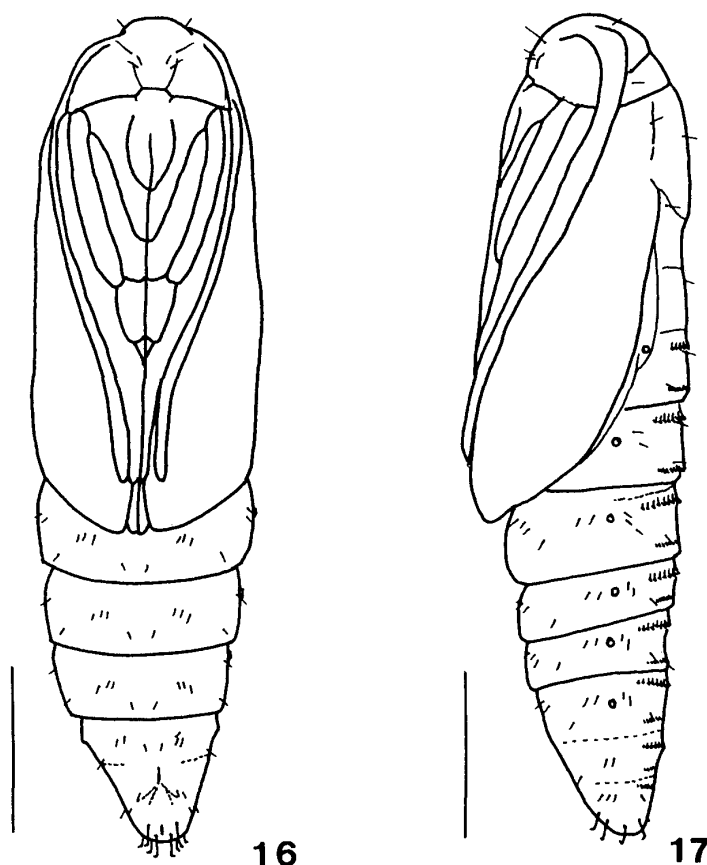
Figs 11-15. Larval chaetotaxy of *Heleanna melanomochla* (Meyrick). 11. Head, frontal view. 12. Head, lateral view. 13. Pro- and mesothorax. 14. Abdominal segment 1. 15. Abdominal segments 6-9 (Scales: Figs 11, 12: 0.2 mm; Figs 13-15: 0.5 mm).

ized, with a pair of pits spinulose on the surfaces. Sternite 7 quadrate, with a pair of strongly sclerotized latero-posterior processes. Antrum cup-shaped; lamella post-vaginalis concaved posteriorly, extending laterally, connected with posterior part of sternite 7. Ductus bursae long, with long ring-like sclerotization. Corpus bursae pyriform; signa of two blade-shaped sclerites, equal in size.

Material examined. Lectotype. TAIWAN: Heito [Pingtung], ♂, S. I. [S. Issiki], bred. 4. 35 [IV. 1935], without abdomen, Natural History Museum, London (BMNH). Other materials. TAIWAN: Heito [Pingtung], 1 ♀, IV. 1935 (S. Issiki leg.), genitalia slide 27572, BMNH; Tainan Hsien, Kuanmiao, 4 ♂ 5 ♀, 16-23. III. 1994 (Y. Nasu leg.), ex larvae feeding on mango.

Mature larva (Figs 6, 7, 11-15). Length 9-10 mm. Head longer than broad, light brown, latero-posterior edge black, with black pigmentation on ocellar area and galea. Spinneret slender, with round top. Prothoracic shield yellowish brown, posterior edge dark. Thoracic legs yellowish brown. Body yellowish brown (Fig. 6), dark reddish before pupating (Fig. 7); integument densely spinulose. Pinacula small, concolorous with body. Setae short, pale. Anal plate light brown. Anal fork present. Crochets uniordinal, circle; 27-29 on ventral leg, 16-17 on anal proleg.

Chaetotaxy (Figs 11-15): P1 closer to AF2 than to AF1. A2 almost equidistant from A1 and A3. O1 closer to ocellus II than to ocellus I. O2 ventro-caudal to ocellus I. On abdominal segments except segment 8, SD1 and SD2 on different pinacula. On abdominal segment 8, SD1 and SD2 cephalad of spiracle. On segment 9, D2s on same



Figs 16, 17. Pupa of *Heleanna melanomochla* (Meyrick), ♀. 16. Frontal view. 17. Lateral view (Scales: 1 mm).

pinaculum; L group trisetose. SV group on abdominal segments 1, 2, 3, 7, 8 and 9 numbering 3, 3, 3, 2, 2, 2 respectively.

Material examined. TAIWAN: Tainan Hsien, Kuanmiao, 3 exs feeding on mango, fixed on 14. III. 1994 (Y. Nasu leg.).

Pupa (Figs 8, 16, 17). Length 5-6 mm. Color light brown. Frons round. Clypeus with three pairs of setae, of these setae cephalad pair long. Abdominal segment 10 with four pairs of hooked setae.

Material examined. TAIWAN: Tainan Hsien, Kuanmiao, 1 ♂ 1 ♀, fixed on 14. III. 1994 (Y. Nasu leg.), *ex* larvae feeding on mango.

Host-plant. Mango, *Mangifera indica* L. (Anacardiceae).

Biological note. Larvae feed on the young leaves of mango, folding longitudinally the apices and margins of the leaves (Fig. 5). Pupation takes place in the pupal case in folded leaf (Fig. 8).

Distribution. Taiwan.

Remarks. This moth is superficially similar to *H. physalodes* (Meyrick, 1910), but differs from it in having wide dorsal concavity of tegumen, thick socius in male genitalia, and a pair of strongly sclerotized latero-posterior processes on sternite 7 in female genitalia.

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摘 要

台湾においてマンゴーを加害する *Heleanna melanomochla* (Meyrick) について (鱗翅目, ハマキガ科) (那須義次)

Heleanna melanomochla (Meyrick) を再記載した。雌雄交尾器および幼虫・蛹は初めて図示される。本種の幼虫はマンゴー (*Mangifera indica* L.) の若い葉の先端や縁を縦に折りたたみ、摂食する。蛹化は折りたたまれた葉の中で行われる。

分布：台湾。

本種は外部表徴において、*H. physalodes* (Meyrick) に類似するが、雄交尾器において tegumen の背方部に広いくぼみを持つこと、太い socius を持つこと、雌交尾器において第7腹板に強く硬化した1対の後側方突起を持つことにより区別できる。

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